

New species of *Torymus* (Hymenoptera: Torymidae) from Central Asia and Caucasus

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Abstract. New species of *Torymus* (Hymenoptera: Torymidae) from Central Asia and Caucasus. Four new species are described: *Torymus iacchos* sp. n., *T. silenus* sp. n. and *T. brevicoxa* sp. n. from Central Asia, and *T. luridus* sp. n. from Caucasus. A new species group is defined to accommodate one of the new species.

Samenvatting. Nieuwe soorten uit het genus *Torymus* (Hymenoptera: Torymidae) uit Centraal-Azië en de Kaukasus

Vier nieuwe soorten uit het genus *Torymus* worden beschreven: *Torymus iacchos* sp. n., *T. silenus* sp. n. en *T. brevicoxa* sp. n. uit Centraal Azië en *T. luridus* sp. n. uit de Kaukasus. Een nieuwe soortengroep wordt opgesteld om een van de nieuwe soorten in onder te brengen.

Résumé. Nouvelles espèces du genre *Torymus* (Hymenoptera: Torymidae) de l'Asie centrale et du Caucase

Quatre espèces nouvelles du genre *Torymus* sont décrites: *Torymus iacchos* sp. n., *T. silenus* sp. n. et *T. brevicoxa* sp. n. d'Asie centrale et *T. luridus* sp. n. du Caucase. Une des nouvelles espèces est placée dans un groupe espèce nouveau.

Key words: Hymenoptera, Torymidae, *Torymus*, new species, Central Asia, Caucasus.

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Examining during 1999–2000 various materials deposited in Schmalhausen Institute of Zoology, Kiev, (SIZK) the author has found four new species of *Torymus*.

The terminology as adopted in Graham & Gijswijt (1998) was used in the descriptions that follow. To the characters used in that paper, a few more are added here that has proved to be of use in describing *Torymus* species. One of them is the ratio of the length of the propodeum measured in the middle to that measured half way to the propodeal spiracle laterad (the maximal length of propodeum): thus, petiolar foramen of propodeum is low if this ratio is 0.8–1.0 (majority of species), and high if it is 0.6 or less (species in the *varians*-group). Next, the character of circumocellar groove, encircling lateral ocelli postero-laterally, (distinct/not distinct) is often important.

Depositories:

SIZK Schmalhausen Institute of Zoology of Ukrainian Acad. Sci., Kiev, Ukraine

ZMAN Zoologisch Museum Amsterdam, afd. Entomologie, The Netherlands

Torymus iacchos sp. n.

MATERIAL. **Holotype** ♀: south-eastern Kazakhstan, northern Tien Shan, Zailiysky Alatau, Pravy Talgar, 1,500–1,750 m, ex galls of *Nipporhodites magna* Vyrzhikovskaya on *Rosa* sp., 26.iii–19.iv.1973 (Antziferova & Mozolevskaya) (SIZK). **Paratypes:** 7♀, 2♂, same data as holotype (SIZK); 1♀, 1♂, same data as holotype (ZMAN); 9♀, locality, date and collector the same as of

holotype but ex galls of *Diplolepis rosae* (L.) (SIZK); 4♀, same locality but without host specification and 25.iv.1978, em. 25.v–1.vi.1978 (Pljushch) (SIZK); 14♀, 14♂, same data except 2,300 m, ex galls of *Diplolepis rosae* (L.), 1973 (Lastochkin) (SIZK).

Apart from the type series designated herein, the following series of *T. iacchos* sp. n. are deposited in SIZK: 6♀, 4♂, same data as holotype; 25♀, 10♂, same data as holotype but ex galls of *Diplolepis rosae* (L.); 5♀, 1♂, Kyrgyzstan, Tien Shan, Kyrgyz Alatau, 1,200 m, ex galls of *Nipporhodites* sp., 7.iv.1974 (Ionov); 2♀, Tadzhikistan, Kondara, ex galls of *Diplolepis* sp. on *Rosa canina* L., coll. 25.iii.1981, emerg. autumn of 1981 (Zerova); 33♀, 19♂, same locality as of holotype but 1,700 m, on *Rosa* sp., 8.v.1980 (Ermolenko); 7♀, 9♂, S-E Kazakhstan, Alma-Ata reserve, *Rosa* sp., coll. 1.v.1978, emerg. 14–16.v.1978 (Pljushch), 14♀, 20♂, Kyrgyzstan, canyon of Alamedin riv., 1,500 m, 13.iv.1980 (Eremchenko).

♀.—Head in dorsal view (fig. 1) nearly twice as long as broad, temples about 0.3 length of eye, weakly curved; ocelli small, POL 1.3–1.6 times OOL, OOL 1.3–1.5 times OD; foremost point of occipital carina much behind the level of posterior margin of eyes. Vertex very strongly and finely reticulate, without conspicuous punctures; circumocellar groove distinct. In frontal view (fig. 2) head 1.1–1.2 times as broad as high; anterior ocellus with its lower edge level with upper eyelid; eyes bare, separated by 1.2 times length of scape, or by slightly more than their height; inner orbits parallel; genae virtually straight, 0.27–0.30 height of eye; mouth 2.4–2.5 malar space; clypeus slightly produced forward, bilobate. Face with some rugosity (weaker in smaller specimens) running laterad from frontal depression and converging upwards. Scape 5 times as long as broad, reaching well above level of vertex, curved inward. Anellus 1.3 times as long as broad at distal end, evenly narrowing to base, 0.5 times as long as F1, closely applied to it; F1 appearing very slightly constricted proximally; F1–F4 1.3–1.4 times as long as broad, F5–F7 becoming shorter so that F7 is subquadrate; sensilla biserrate (those in basal row on F1 often sparse). Flagellum filiform, 1.25 times as long as breadth of head.

Thorax 1.6 times as long as broad; mesoscutum about 1.25 times as long, loosely transversely rugose, with only extreme base, side lobes medially and axillae strongly alutaceous; parapsidal lines rather deep; scutellum 1.2–1.25 as long as broad, transversely rugose, more densely on sides, on posterior third more shallowly; piliferous punctures not conspicuous on mesoscutum, very slightly so on scutellum; base of scutellum broadly rounded. Dorsum of thorax in long sparse whitish porrect hairs, longer on posterior third of scutellum. Flange not trabeculate. Propodeum, including callus, alutaceous, with a row of medium-sized foveolae along base, sloping at 60° to longitudinal axis of body; length of propodeum in the middle 0.7–0.8 times its maximal length. Prepectal depression large and shallow. Mesepimeron almost twice as long as broad, appearing pointed apically, alutaceous at base, 0.6 times as long as mid coxa. Legs slender: fore coxa 3 times, hind coxa 2.9–3.2 times as long as broad; the latter loosely reticulate, abundantly pilose dorsally, with posterior margin evenly curved and bearing 8–12 longer hairs in distal half. Hind femur 4.2–4.5 times as long as

broad. Longer spur of hind tibia 0.3 times as long as basitarsus which is 0.35 times length of tibia. Fore wing (fig. 4) 2.6 times as long as broad, upper surface of costal cell with incomplete row of setae, row on lower surface broadly interrupted in basal half; basal cell with several setae in one row, or irregularly and/or sparsely scattered, below SM. Speculum closed, hardly extending beyond parastigma. SM:M:PM:ST as 86:55:20:7. Stigma large, subrectangular, petiolate, oblique, surrounded by a narrow fuscous band, or by a cloud. Also, some infuscation is beginning to form a discally expanding streak, but vanishes shortly.

Gaster distinctly longer than mesosoma, strongly compressed; 1st gastral sternite 1.6–1.7 times as long as hind coxa. Tergites 1 to 4 deeply and narrowly incised, tergite 5 broadly and shallowly emarginate. Gaster abundantly pilose on sides. Ovipositor sheaths 1.3–1.5 times longer than body, index from slightly more than 3 (in aberrantly small specimens) to 4.2–4.5.

COLOUR.—Head light-green, or varied with golden-coppery (or coppery-bronze, as in *T. giraudianus* (Hoffmeyer)) on vertex and on face; dorsum of thorax bright golden-coppery, with light-green tinge prevailing on pronotum, along sutures, on posterior part, or the whole of, scutellum (the green colour occasionally appears on it if observed at a sharp angle); sides of thorax often with less saturated colour, less shiny, tending to testaceous, except that mesepimeron is then darker. Gaster shiny, with the same light-play effect that is on scutellum. Flagellum black, pedicel faintly metallic green; scape testaceous, sometimes more or less darkened dorso-apically. Legs testaceous, pale-yellowish, except for golden-coppery hind coxae and mid coxae at base. SM and ST brownish, M and PM testaceous.

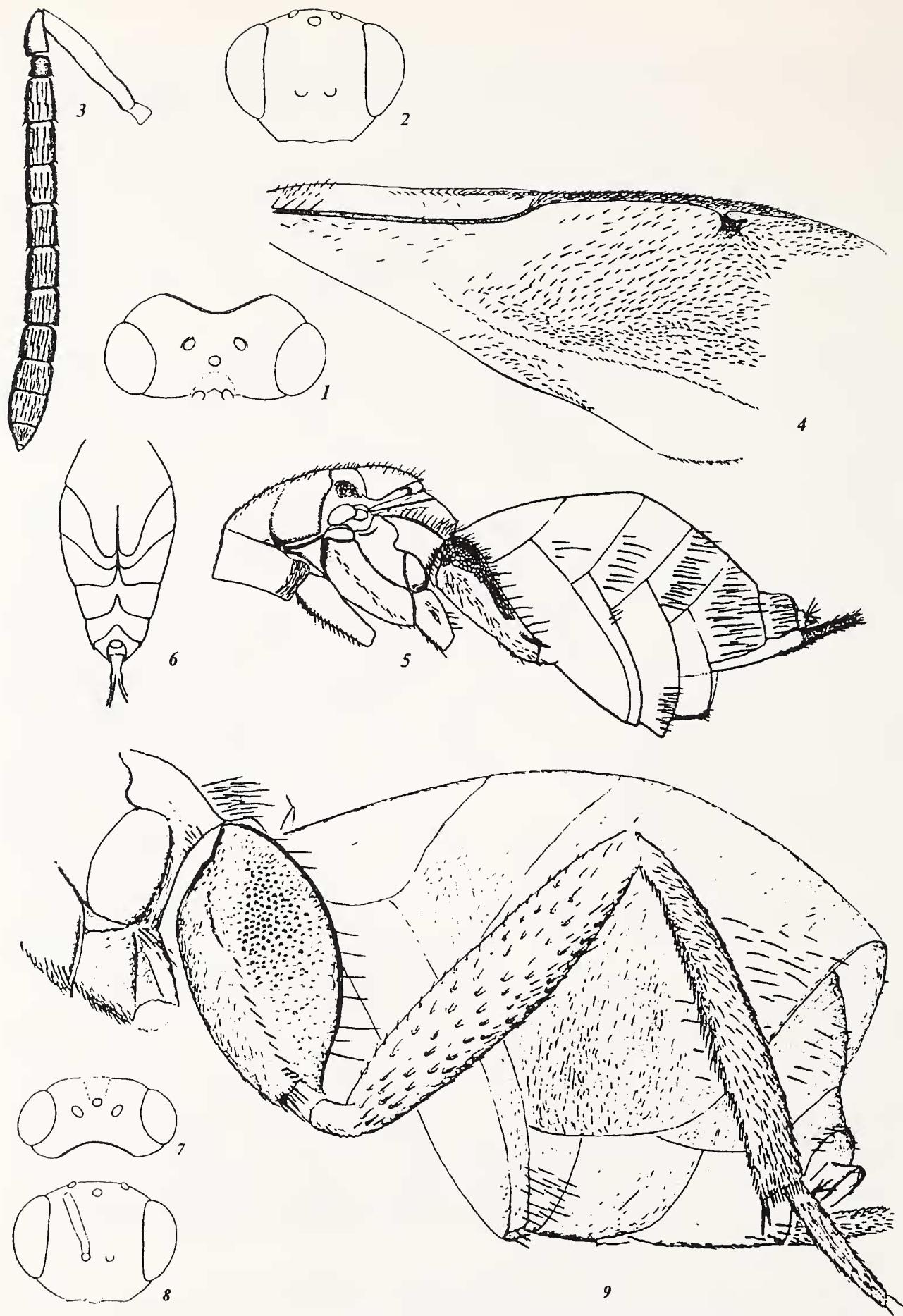
Length of body excluding ovipositor, 3.0–3.5 mm (holotype 3.2 mm).

♂.—Differs from female as follows. Ocelli smaller, POL 0.8–0.9 times OOL, OOL 2.1–2.2 times OD (sic). Funicular segments with setae in one row. Vertex including oculo-ocellar space, upper face and, less markedly, lower face, duller, more densely and strongly reticulate; pilosity shorter, covering almost the whole of vertex. Scutellum with a trace of frenal groove, posterior to which the sculpture is alutaceous, obsolescent on apex. Legs somewhat stouter; fore coxae metallic green. Body length 2.0–2.5 mm.

VARIATION.—Smaller specimens have shorter ovipositor (in one female, but nearly 3 mm long, the ovipositor index is about 3), more green colour on the head; also, the metallic golden-coppery tinge is weak on sides of thorax, and the femora are fuscous in smaller specimens. Rows of setae on both sides of costal cell of fore wing are sometimes complete. Lateral ocelli are occasionally smaller and ratio OOL:OD is greater, as much as 1.7. The sculpture on posterior third of scutellum is sometimes quite shallow.

BIOLOGY.—Reared from galls of *Nipporhodites magna* Vyrzhikovskaja and of *Diplolepis rosae* (L.) (Cynipidae) on *Rosa* sp.

DISTRIBUTION.—Northern Tien Shan: south-eastern Kazakhstan, Kyrgyzstan, Tadzhikistan.



Figs. 1–6, *Torymus iacchos* sp. n., ♀. 1, head in dorsal view; 2, head in frontal view; 3, antenna; 4, fore wing; 5, habitus; 6, gaster from above.

Figs. 7–8, *T. luridus* sp. n., ♀; fig. 9, *T. brevicoxa* sp. n., ♀. 7, head in dorsal view; 8, head in frontal view; 9, posterior part of body (holotype).

Large series (tens of specimens) were reared from the host specified above and from another cynipid, *Diplolepis rosae* (L.), together with *T. bedeguaris* (L.) and *Syntomaspis montanus* Zerova. Dr. Zerova mentioned (pers. comm.) that the former host species was not recorded from localities below 1,000 m.

The new species stands apart from any species group of Graham & Gijswijt (1998). The peculiar small ocelli, especially in males, occur also in species of *austriacus*-group, which differ from *T. iacchos* sp. n. in the smooth frenal area, the enlarged mesepimeron, the base of scutellum sharply pointed, and in the not distinct circumocellar groove. A diagnosis for a new species group including the single species, *T. iacchos* sp. n., may be as follows.

Species-group of *iacchos*— Mandibles with 3 teeth; parastigma not swollen; hind femur without tooth; frenal area with some sculpture; frenal line absent; stigma petiolate; ocelli small; base of scutellum truncate; F1 normal (not elongated); F1 not distinctly stouter than anellus; petiolar foramen of propodeum normal (low); tibial spurs normal; propodeum smooth; hind coxa pilose dorsally; parascrobal areas not protruding; mesepimeron not swollen; anterior margin of hind coxa straight.

Torymus silenus sp. n.

MATERIAL. **Holotype** ♀: Tadjikistan, Anzob Pass (3,300 m), 2.vii.2000 (Perepechaenko) (SIZK).

♀.—Head in dorsal view twice as broad as long; temples moderately curved, 0.25 length of eye; POL 1.8 OOL, OOL 1.3 times OD; vertex finely reticulate with several large and close, but shallow, punctures between ocelli, sides of upper face with smaller and sparser punctures; circumocellar groove quite distinct. Head in frontal view 1.1 times as broad as high with lower margin of anterior ocellus slightly above upper eyeline; eyes separated by 1.15 their height; inner orbits parallel. Genae straight, 0.3 height of eye, mouth 1.9 malar space; anterior margin of clypeus barely produced, entire. Face in short white hairs. Scape 4.8 times as long as broad, reaching top of anterior ocellus. Pedicellus about twice as long as broad; anellus quadrate, 0.6–0.7 times as long as F1 and closely applied to it; F1–F5 slightly oblong, F6 and F7 subquadrate; clava 0.9 times as long as F6+F7. Sensilla in one row on F1–F3, in two irregular rows on F4–F7. Length of flagellum plus pedicellus 1.3 times breadth of head; flagellum weakly clavate; breadth of F7 1.4–1.5 times that of F1.

Thorax 1.52 times as long as broad; mesoscutum as long as broad, on anterior half rippled, strongly alutaceous at base, piliferous punctures small and sparse; scutellum 1.3 times as long as broad, strongly and finely alutaceous, sculpture weak to obsolescent at apex, piliferous punctures larger and sparser, more distinct than those on mesoscutum; base of scutellum broadly rounded. Dorsum of thorax in thin short adpressed hairs. Flange not trabeculate. Prepectal

depression large and shallow. Propodeum sloping at 60° to longitudinal axis of body, smooth and shining throughout, with an interrupted row of small foveolae along base; length of propodeum in the middle 0.8 its maximal length. Mesepimeron about 1.5 times as long as broad with its apex slightly oblique, about 0.8 times as long as mid coxa. Hind coxa 2.8 times as long as broad with posterior margin weakly and uniformly curved, abundantly pilose dorsally; hind femur 4.6 times as long as broad; longer spur of hind tibia slightly less than apical breadth of tibia, approximately 0.35 the length of basitarsus which is 0.4 times as long as tibia. Fore wing 2.5 times as long as broad; costal cell with entire rows of setae on both surfaces plus scattered setae on underside in distal third; basal cell closed, with several (5) setae below SM. SM:M:PM:ST as 63:44:11:5. Speculum narrowly open proximally, extending to 1/3 of the length of M. Stigma shortly petiolate, very slightly oblique.

Gaster about 1.2 times as long as mesosoma, rather strongly compressed; 1st gastral sternite 1.1–1.2 times as long as hind coxa; hypopygium bare except for few short setae at apex, situated at about 0.8 the length of gaster; 5th gastral tergite broadly and moderately emarginate. Gaster strongly shining, very weakly alutaceous laterally and clothed in long hairs on sides of tergites 5 and 6. Ovipositor sheaths as long as body minus head, index 3.1.

Length of body excluding ovipositor, 2.6 mm.

COLOUR.—Body dull-green with vertex golden-coppery, mesoscutum and scutellum purplish-bronze, and with strong coppery reflections on gaster; scape testaceous beneath; coxae dull-green, legs otherwise dark-amber-testaceous except mid and hind tarsi which are pale-yellow and except dark 4th and 5th segments of all tarsi; tegulae testaceous, axillar sclerite entirely dull-green; venation brownish, stigma and SM being darker than M or PM.

♂ unknown.

BIOLOGY unknown.

DISTRIBUTION.—Tadjikistan.

The placement of this species is problematic. *T. silenus* sp. n. somewhat resembles *T. iacchos* sp. n. in the characters of the head: ocelli tending to smaller size (though not so small as in *iacchos*), very fine and 'crisp' sculpture on sides of upper face, and the shape of posterior margin of gastral tergite 5 (moderately concave); also it has similar golden-coppery colour of the body. Otherwise the new species is fairly close in general aspect to *T. wachtliellae* Graham & Gijswijt; though, it has hind coxae elongated, which is not observed in any species of *chloromerus*-group.

Torymus brevicoxa sp. n.

MATERIAL. Holotype ♀: Tadjikistan, Kondara, 24.iv.1980, em. 12.v.1980 ex galls of *Diplolepis* sp. on *Rosa* (Pljushch) (SIZK); paratype: ♂, same data as holotype (SIZK).

♀ (fig. 9).—Head in dorsal view twice as broad as long; temples weakly curved, 0.35 length of eye; occipital carina with foremost point far behind the

level of posterior margin of eyes, occipital aperture just reaching inner margins of eyes; ocelli medium-sized: POL 1.7 times OOL, OOL 1.35 times OD, distance from lateral ocellus to occipital carina 1.2 times OOL; circumocellar groove not distinct. Vertex and upper face finely alutaceous with overlaying coarse irregular corrugation. In frontal view head subtrapeziform, as high as broad; genae straight, malar space 0.35 height of eye, mouth 1.8 malar space; eyes separated by 1.1 their height. Clypeus marked with weak radial rugae, its anterior margin not produced, entire. Face in short sparse hairs. Scape about 4 times as long as broad, reaching to lower margin of anterior ocellus. Pedicellus 1.5 times as long as broad; anellus quadrate, as broad at apex as pedicellus and more than half its length; F1 stouter than anellus, slightly longer than broad, F2 quadrate, F3 and the following segments transverse; clava as long as F6+F7 and not broader than F7. Flagellum stout and filiform, 1.1 times breadth of head. Sensilla short, in one row covering distal halves of funicular segments.

Thorax 1.66 times as long as broad, rather strongly arched; mesoscutum 1.25 times, in coarse and close piliferous punctures combined with transverse rugosity; scutellum 1.2 times as long as broad, with frenal area occupying 0.35 its length, perfectly smooth and delimited by a straight line, anterior to which the sculpture is similar to that of mesoscutum but ridges between punctures are lower and punctures less close. Base of scutellum narrow; parapsidal lines deep. Dorsum of thorax in rather short, subdecumbent hairs. Flange weakly trabeculate. Propodeum sloping at 70°, about 0.8 times as long in the middle as its maximal length, with several (4–5) large and deep foveolae along base at each side and with two vestigial longitudinal striae, otherwise smooth. Visible parts of prosternum fused without suture between them. Prepectal depression deep and well-marked beneath. Mesosternum with a longitudinal ridge in upper 2/3. Mesepimeron barrel-shaped, 1.5 times as long as broad and distinctly longer than mid coxa. Hind coxa stout: 1.8 times as long as broad; dorsal carina traceable to 4/5 of its dorsal margin, which is curved evenly and provided with a few setae in basal half; lateral surface of hind coxa swollen, uniformly reticulate. Hind femur 3.9 times as long as broad and 1.4 times as long as hind coxa, with its maximal breadth in the middle; spurs of hind tibia short, the shorter slightly more than half the length of the longer one which is a little shorter than apical breadth of tibia and about 0.3 times as long as basitarsus; the latter 0.4 times as long as tibia. Fore wing nearly 2.5 times as long as broad; row of setae on upper side of costal cell broken, that on lower surface entire, though sparser in the middle; basal cell closed below, with a row of setae below SM nearly reaching parastigma; the latter hardly broader than SM. Speculum small, little extending beyond parastigma, open below. Stigma petiolate, very slightly oblique. SM:M:PM:ST as 100:52:19:9. Disc immaculate.

Gaster as long as mesosoma, not compressed; 1st gastral sternite 1.5 times as long as metacoxa, 2nd sternite not reaching beyond tip of the 1st sternite. Hypopygium pilose, short, situated very near the tip of 1st sternite. Posterior margin of tergite 5 slightly concave, that of tergite 4 straight and entire. All sternites except 1st, and all tergites, alutaceous; gaster moderately pilose on sides

in upper half. Ovipositor sheaths as long as gaster plus 1/3 of mesosoma with index 3.4.

Length of body excluding ovipositor, 3.7 mm.

COLOUR.—Body including scape entirely and all coxae, femora and tibiae, dull-violet; knees and 1–3 tarsal segments yellowish; tegulae and axillar sclerites as body. Venation except stigma and parastigma, which are dark-brown, pale testaceous.

♂ shows no remarkable divergence in structure or in colour beyond normal dimorphism in *Torymus*. Length of body 2.3 mm.

Morphologically *T. brevicoxa* sp. n. stands separately from the rest of the species with frenum smooth and delimited by an impressed line; from species in *varians*-group it differs particularly in having petiolar foramen of propodeum low; from *T. cyaneus* Walker, which has similarly short metacoxae, the new species differs in the smaller ocelli, strongly raised sculpture throughout mesoscutum (it is smooth at the base between punctures in *T. cyaneus* Walker).

Another species with offset frenum that was reared from galls of Cynipidae on *Rosa*, also in Central Asia, is *T. montanus* (Zerova). It was described as *Syntomaspis*. The two species are differently coloured (the latter is uniformly green).

Torymus luridus sp. n.

MATERIAL. Holotype ♀: East. Georgia, Khodjori, 2.ix.1974, em. 28.07.1975 ex *Quercus* (Khodjevanishvili) (SIZK).

The ♀ is close to *T. nobilis* Boheman; it differs in the shape of the head: head in dorsal view (fig. 7) 2.05 times as broad as long, temples 0.25 length of eye, moderately curved; occipital aperture not quite reaching inner orbits of eyes, its foremost point passes clearly the level of posterior margin of eyes. POL 1.9 times OOL, OOL 1.2 times OD, distance from lateral ocellus to occipital carina 1.4 OOL. Vertex alutaceous, without rugosity, almost smooth in places near eyes, with occasional punctures. Parascrobal areas protruding by about 1/3 length of eye. In frontal view (fig. 8) head 1.35 times as broad as high, genae weakly curved, malar space 0.38 height of eye, mouth 1.9 malar space; eyes with inner orbits very weakly diverging downwards, separated by 1.2 their height. Scape reaching middle to top of anterior ocellus, weakly bent in lower part. Pedicellus 1.8 times as long as broad, nearly as long as F1; anellus slightly transverse, narrower than F1 at base; F1–F6 oblong, F7 quadrate; clava 0.8 times as long as F6+F7; sensilla numerous, short, biserrate; flagellum virtually filiform.

In the rest *T. luridus* sp. n. is different structurally from *T. nobilis* Boheman only in shorter hind coxa (1.8 times as long as broad) and in shorter ovipositor (index 1.5).

COLOUR.—Head deep greenish-blue with vertex more green; mesosoma deep violet-blue varied with green on pronotum and propodeum; sides of thorax olive-green, mesepimeron with a purplish tinge; hind coxae green except at tip, legs

otherwise brownish-testaceous, claws dark; gaster purplish, suffused testaceous at base; scape brownish-testaceous except at apex; tegulae and axillar sclerites brownish; venation pale.

♂ unknown.

BIOLOGY.—Apparently a parasite of Cynipidae on *Quercus*, as other species in *erucarum*-group.

DISTRIBUTION.—Georgia.

T. luridus sp. n. belongs to the *erucarum*-group.

Acknowledgements

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Reference

Graham, M. W. R. de V., Gijswijt, M. J. 1998. Revision of European species of *Torymus* Dalman (s. lat.) (Hymenoptera: Torymidae). — *Zoologische Verhandelingen* **317**: 202.